

The Utah Department of Health utilized Utah Statewide Immunization Information System (USIIS) immunization records to determine if children who are born later in a family are more at risk for inadequate immunization. Utah Birth Certificate data were compared with USIIS data for children 19 to 35 months of age as of December 31, 2004. The study matched 47,822 active patients in USIIS to Birth Certificate data. Patients were only included in the study if they had at least one immunization that was not the birth dose Hepatitis B. Patients were considered adequately immunized if they received 4 DTP, 3 Polio, 1 MMR, 3 Hib, and 3 Hep B. The following variables were included in their analysis:

- ◆ Birth order of the child
- ◆ Rural vs. Urban
- ◆ Mother's race
- ◆ Mother's education level
- ◆ Mother's age
- ◆ Marital status
- ◆ Father's race
- ◆ Father's education level
- ◆ Father's age

Only 57% of the children were adequately immunized with the 4:3:1:3:3 series. Immunization rates only increased by 3% when using 3 DTP, 3 Polio, 1 MMR, 3 Hib, and 3 Hep B as the standard. This indicates that the fourth dose of DTP may not be the principal factor in lower than desired immunization rates. Children were less likely to be up-to-date (UTD) if they were born third or later and if their mother was younger than 20 years. They were far more likely to be UTD at two years, if they were UTD at three months.

Key Findings		
Category	Odds Ratio for immunization at age 19-35 months	P-value
Third or subsequent born child	0.83	<0.0001
Child's mother is younger than 20	0.83	<0.0001
Up to date at 3 months	6.6	<0.0001

Implications of Birth Order Study:

This knowledge can assist in making decisions about appropriate intervention strategies (e.g. target audience of young mothers; clinic goal of having patients UTD at three months).

USIIS data is useful to answer questions about children's immunization status and immunization trends.